

REMARKS

Independent claim 13 has been amended to more clearly define the method in accordance with the present invention with the sequence of steps required for forming the bottle including premixing of selected resin pellets with dyestuffs and the addition of pellets including dyestuffs in an ordered manner. No new matter is added by this amendment inasmuch as this method was originally disclosed in the specification.

The Examiner has earlier rejected claim 13 under 35 USC 103(a) as being unpatentable over U.S. 5,799,837 to Firestone, et al. in view of U.S. Patent Application Publication 2001/0048988 to Forte, et al.

In this rejection, the Examiner has stated that Firestone, et al. shows it is known to carry out a method of forming a bottle useful as a pharmaceutical container and dispenser utilizing a mixture of polypropylene and resin with UV absorbers.

The Examiner acknowledges that Firestone does not show for a second and third sets of resin pellets or providing dyestuffs to the pellets and therefore refers to Forte to show that it is known to carry out a method of making a bottle useful as a pharmaceutical container.

While the teachings generally show the use of bottles for pharmaceutical containment and utilization of dyes, the Applicants still maintain that the prima facie case of obviousness under 35 USC 103(a) has not been established due to the unique characteristics of dyestuffs and order of mixture.

As earlier argued, the test under 35 USC 103 is whether the claimed invention as a whole in light of all the teachings of the references in their entirety would have been obvious to one of ordinary skill in the art at the time the invention was made.

The Examiner is gathering features from Forte, et al. which do not teach the whole of the present invention does not establish a prima facie case of obviousness.

It is clear that in the world of dyestuffs, combinations of dyes provide unique results, as the Applicants evidence by referring the Examiner to the attached article particularly directed to blue and purple dyes in Saudi Aramco World, Volume 11, No. 7, August/September 1960 entitled "Tyrian Purple" (Attachment A). A reading of this article gives incite as to the nature of dyestuff in which the Tyrians obtain colors of different shades yet none of their Mediterranean neighbors using the same species of shellfish could match them.

A similar case is presented here. It is the unique combination of the dyestuffs and the order in which they are introduced into the bottle which provides for a unique result.

In addition to the selection of dyestuffs set forth by the Applicants, the order of mixing such dyestuffs further define the invention. The order of mixing is recognized as being important with regard to resins. For example, see U.S. 7,142,361 entitled "Optical Material Adhesive Fill Including Optical Material and Projection Screen Including Film" at column 4, lines 23-24 wherein it is stated: "To obtain a

stable material 28 resin, the order of mixing components is important." (Emphasis added)

None of the references cited by the Examiner suggests the present invention when taken as a whole which includes this specific combinations of dyestuffs and the order of mixing. The references are totally silent in this issue.

The problem addressed by the invention is providing a container system which can provide not only product integrity but also enable visual inspection of the contents while at the same time providing a distinctive color which can be recognized by the user.

The inventors efforts have resulted in a unique combination of dyestuffs and order of combining the dyestuffs in order to solve this problem. None of the references relied on by the Examiner recognize or address this problem. The Examiner is merely using tidbits from selected references to illustrate that components of the Applicants invention were known. However, the combination claimed, including the methodology of combination is nowhere to be found in the references.

Therefore, in summary the Applicants submit that the Examiner has not made a prima facie case of obviousness for amended claim 13 under 35 USC 103(a) on the basis of the Firestone, et al. and Forte, et al. references. Reconsideration and withdrawal of this rejection is respectfully requested.

Claims 14-16 have been rejected by the Examiner under 35 USC 103(a) as being unpatentable over Firestone, et al. and

Forte, et al. and further in view of U.S. 6,039,893 to Arakawa, et al.

In this rejection, the Examiner states that with regard to claim 14 Forte, et al. does not teach providing the second resin and pellets comprising a blue dye and purple dye pellets and therefore reaches to Arakawa, et al. to teach that bluish, purple, and blue dye show absorption bands from 550 nm to 620 nm and concludes it would have been obvious to one having ordinary skill at the time to modify the Forte, et al. method of making pharmaceutical container to have the blue and purple dye.

In response thereto, the Applicants reiterate the arguments hereinabove set forth and assert that the Examiner is merely picking a selected teachings from the references without recognizing the invention as a whole and further none of the references cited by the Examiner teach the methodology which, as hereinabove set forth by supported references, is not taught nor suggested by the references. The Examiner is respectfully requested to withdraw the rejection of claim 14-16 under 35 USC 103(a) under 35 USC 103(a) on the basis of Firestone, et al., Forte, et al., and Arakawa, et al.

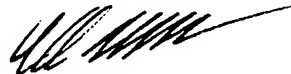
With reference to claims 15 and 16, the Examiner has state that Forte, et al. does not explicitly teach the ratios disclose and states that one of ordinary skill in the art would know that mixing various proportions with dyestuffs would produce an end result such as a light barrier of property. The Examiner relies on U.S. 6,465,062 to Cook, et al. for teaching that the amount of yellow or black included in the multi-layered wall material can be varied depending upon the desired light barrier. The Examiner states that Cook

establishes that the proportions of dyestuffs is a result effective variable and therefore is covering the optimum value of a result effective variable revolves only routine skill in the art.

The Applicants again reiterate the teachings of the prior art and, as such, teachings show that the combinations of dyestuffs is not routine and such recognition has exist since antiquity and continues to this day. The Examiner's conclusions cannot be sustained.


In view of the arguments hereinabove set forth which are substantiated by submitted references along with amendment to the claims, it is submitted that each of the claims now in the application define patentable subject matter not anticipated by the art of record and not obvious to one skilled in this field who is aware of the references of record. Reconsideration and allowance are respectfully requested.

Respectfully submitted,



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## Tyrian Purple

Never before in history—or since—did a color bequeath so much glory to a nation.

One day while Hercules was strolling along the shores of Phoenicia with a nymph he loved, named Tyrus, his dog, who was running beside them, came upon a *Murex trunculus*, with head protruding from its trumpet-like shell. The dog quickly devoured the shellfish and came away with a mouth stained brilliant purple. Enraptured by the tint, Tyrus claimed a robe of that same striking shade as the price Hercules would have to pay for her hand.

Hercules, being Hercules, was able to gather from the Mediterranean waters enough mollusks to fulfill the wish of his ladylove. Thus goes the legend of the origin of Tyrian purple.

The true story of the purple-dyeing industry of Tyre also has its beginnings so far back in antiquity that they have become obscure, faded into the past along with the fabled cities and colonies of Phoenicia. Whatever the circumstances of the origin of the reddish-purple dye, the trade and prosperity of Phoenicia depended on it to a vast degree. Horites of Mesopotamia reached the Mediterranean and described the shoreland as "knaggi" which meant "belonging to (the land) of purple." This word became "kena" in Phoenician, "kena'an" in Hebrew and finally "Canaan," an Old Testament term for Palestine. It was the Greeks who applied to the Canaanites (with whom they first traded) the term Phoenicia, from the Greek "phoinix," meaning purple-red.

Probably, then, purple-dyeing had been established in Phoenicia about the 17th century B.C., when the term "purple" had already been linked to the inhabitants of Palestine.

Tyrian purple was praised by prophets and poets. Homer wrote his great epic poems during the heyday of Phoenicia and spoke of the brilliance and beauty of the cloths that Paris brought back to Troy from there. In the Old Testament, Ezekiel lamented the fall of Tyre, and spoke of—"perfect beauty" and of "purple and brodered work and fine linen . . ."

At certain periods of history, wearing purple was considered the prerogative of priests, senators and emperors. The term "born to the purple" to this day has the connotation of high or royal birth because during the Byzantine period empresses bore their royal offspring in special chambers draped in the opulence of purple cloth.

The island city of Tyre, known as the indomitable "Mistress of the Mediterranean," somehow survived for more than 2,000 years the waves of civilization and conquest that swept the eastern shores of the Mediterranean. And long after Phoenicia ceased to exist as a nation, the

Syrians carried on the Tyrian purple-dyeing industry. In the first century, A.D., the Greek geographer Strabo, with less elegance than Ezekiel or Homer, referred to Tyre as a city made "unpleasant for residence" by the smell from the many dye works. Throughout the era of Rome's great empire, when silk was imported from China, it was sent to Beirut to be loomed, then on to Tyre to be dyed, with purple silk fetching the highest prices.

Much later, a 12th-century visitor speaks of the "purple dye" of the city and describes Tyre as "very commercial and one to which traders resort from all parts." Yet another pilgrim of that century writes that Tyre "surpasses in beauty all the cities of Phoenicia."

Pliny seems to offer the best account of the Tyrian method of dyeing, although the fine points of the process, which gave the Tyrians their unmatched superiority, is still anyone's conjecture.

The dye that made Tyrian purple unique was extracted from the meat of not one, but *two* distinct species of shellfish—the *Purpura pelagia* or *Murex trunculus*, and the *Purpura lapillus* or *Buccinum lapillus*. The *Buccinum* is found on rocks in comparatively shallow water, while the *Murex* prefers deeper water. In modern times it has been dredged from depths of 25 fathoms. Both shells have a wide mouth, like a trumpet, and a spiral form terminating in a small, rounded head. The *Murex* is much larger, however, and the shell more rough and spinous.

In ancient times, the waters of the Phoenician coast abounded with these now rare shellfish. Although they were to be found widely along the shores of the eastern Mediterranean, it appears that only on the rocky part of the coast between Tyre and Haifa, near Mount Carmel, were they so abundant that, from a few drops of fluid per fish, so vast an industry was maintained.

The coloring matter is a creamy liquid contained in a vein of the mollusk, which must be taken alive for it rids itself of the juice when it dies. Moreover, the shellfish have to be collected at the end of winter or very early in the spring, before their egg-laying season, or they become weakened and depleted of their color-producing fluid.

The usual method of collecting them was by lowering baskets, at the end of long ropes into the sea. The bait was mussels or frogs, which the *Murex* would seize upon eagerly. The *Murex* was taken from the shell, and its pigment-rich vein swiftly extracted before the coloring matter could deteriorate. The smaller *Buccinum*, on the other hand, was crushed with its shell and the whole mixture, with salt added, was allowed to steep for three days. Then the pulp was simmered in a leaden vessel (brass or iron was carefully avoided, for such metals might alter the dye). These cauldrons were heated by pipes leading from a central furnace. After ten days of gentle boiling and repeated skimmings, the precious liquid was perfectly clear and so reduced in quantity that 8,000 pounds of pulp produced only 500 pounds of the dye. Raw wool was then tested in the dye until the proper dilution was obtained to produce the color.

One of the trade secrets of the Tyrians probably was the mingling of the dyes from the two different shellfish; for the *Murex*, if used alone, produced a dull, dark purple and the *Buccinum*, a red tone which faded easily. *Buccinum* red was less in demand—200 pounds of *Buccinum* dye brought only 111 pounds of the *Murex*. It was by immersing a cloth, first in the dye of the *Murex* and then in that of the *Buccinum*, that the dark, rich color known as Tyrian purple was obtained. It has been described as "the color of coagulated blood, but when held up to the light showing a crimson hue."

Whatever the particular shade, and however the Tyrians obtained it, none of their Mediterranean neighbors using the same species of shellfish, could match them. Tyrian purple was imitated at various places in the Middle East, Italy, North Africa, and in the Canary Islands, but nowhere could the color be equalled.

Was this partly due to the superiority of the shellfish along the coast of Tyre? Noted historians, like Philip K. Hitti, dismiss this idea by noting that the Phoenicians "discovered and imported the dye from as far as the port of Sparta and the neighborhood of Carthage and Utica."

Was it perhaps due to the brilliance of the sun that shone upon Phoenicia? This might have been a factor, for exposing the tinted cloths to certain degrees of light had a great deal to do with the hue. If a cloth was immersed in the fluid of the *Murex* or *Buccinum* and then exposed to a strong light, it turned successively green, blue, red, deep purple-red, and, finally by washing in soap and water, a permanent shade of bright crimson. The Phoenicians evidently not only put to good use the sunlight of their shores, but also profited by some secret, chemical knowledge. And probably as important as the trick of combining dye and sunlight, was the well-guarded skill of how to use mordants to set the colors permanently. It is well known that alkali from a certain seaweed, found principally on the coast of Crete, was employed in fixing dyes in some places. But whether or not the Phoenicians used it or what they did use, is not known. What is clear, however, is that the Tyrians could obtain dyes with their shellfish in various shades of pink, lilac and pale or deep violet, to supplement their wares of purple cloth.

As the first renowned maritime traders, the Phoenicians contributed inestimable benefits to civilization. From the cedars of Lebanon, they constructed magnificent fleets of trading ships. Intrepid adventurers, they dared the Pillars of Hercules and sailed their fragile boats bravely into the Atlantic; they were the first to visit Britain, perhaps Norway, and the first to circle Africa. Through widespread colonies in Cyprus, Rhodes, Crete, Egypt, Sicily, Malta, France, Spain and North Africa, some of its settlements, such as Carthage, eventually eclipsed the fame of their mother cities.

Wherever they went, the Phoenicians propagated the luxuries that made living more pleasant and comfortable, as well as the knowledge by which such material well-being was attained. As shipbuilders, navigators, merchants, miners, metallurgists, gem-engravers and engineers, they were the first great pioneers. They even spread use of the alphabet far and wide, opening unlimited horizons to the mind.

Whatever combination of inventiveness, industry and Nature's bounty may have spelled success for the manufacturers of Tyre, this much is certain—never before or since in history did dye bequeath so much to the glory of a nation. It was the humble treasure beneath the calm blue sea that lapped their shores which, as much as anything, brought fame and prosperity to the "land of the purple."

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